HW-Term-3-3 (Due 2018/06/11)

Assume that there are m applicants (A_1, A_2, …, A_m) for applying n universities (U_1, U_2, …, U_n). Each U_i is associated with an enrollment limit e_i and a rank order list *RankOrderList_*U_i for applicants, while applicant A_i has a rank order list *RankOrderList_*A_i for universities. For example, there are 4 applicants and 3 universities. The enrollments of 3 universities are $e_1 = 2$, $e_2 = 1$, and $e_3 = 1$. The rank order lists are given as follows:

*RankOrderList_*U_1 = {4, 3, 2, 1}
*RankOrderList_*U_2 = {1, 3, 2}
*RankOrderList_*U_3 = {1, 2, 3}
*RankOrderList_*A_1 = {1, 2, 3}
*RankOrderList_*A_2 = {2, 3, 1}
*RankOrderList_*A_3 = {1, 3, 2}
*RankOrderList_*A_4 = {1}

In this case, the matching results will be:

U_1 : 4, 3
U_2 : 1
U_3 : 2

Your task is to write a program to determine the matching results for applicants and universities.

Input

The first line of input will be n and m, where $1 \leq n \leq 100$ and $1 \leq m \leq 200$. The second line contains the enrollments for n universities. After that, lines for rank order lists of universities and applicants are followed.

n m
e_1 e_2 …e_n
*RankOrderList_*U_1
*RankOrderList_*U_2
…
*RankOrderList_*U_n
*RankOrderList_*A_1
*RankOrderList_*A_2
…
*RankOrderList_*A_m

Output

U_1: <the matched applicants for U_1>
U_2: <the matched applicants for U_2>
…
U_*n*: <the matched applicants for *Un* >

Sample Input

```
3 4 3
2 1 1
4 3 2 1
1 3 2
1 2 3
1 2 3
2 3 1
1 3 2
1
```

Sample Output

```
U_1: 4 3
U_2: 1
U_3: 2
```

Bonus

You will get additional bonus if the previous requirements and one of the following are achieved:

1. Design a class **Matching** and use it in your program.

報告撰寫格式

請以 A4 紙張列印，需包含：

A. 封面頁：班級、學號、姓名

B . 內　容：每頁須編上頁碼，行間距離 1.5 行距，除主標題使用 14pt 字外，其餘請使用 12pt 字。上下左右各 2.5 公分留白。請依下列章節撰寫:

1. 問題描述
2. 解題構想
3. 資料結構與演算法
4. 程式流程圖
5. 程式執行畫面
6. 程式碼 (含註解)

封面範例

程式設計

期末作業

名稱：000000

學號：4978xxxxx

班級：運管一

姓名：呂阿喵

2018/06/12